



SPECIAL AIRWORTHINESS INFORMATION BULLETIN

Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation

**Federal Aviation
Administration**

CE-06-07
November 4, 2005

<http://www.faa.gov/aircraft/safety/alerts/SAIB>

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) advises you, registered owners and operators of **Cirrus Design Corporation (CDC) SR20 and SR22 airplanes** equipped with **Avidyne Primary Flight Displays (PFDs)**, of possible misleading pitch, roll, and heading information.

Background

Avidyne has received several field reports of PFDs displaying incorrect attitude and heading information. These occurrences were accompanied by a "CROSSCHECK ATTITUDE" alert annunciation within approximately 45 seconds after initiation of the condition.

Discussion

Cirrus has issued the attached Owner Service Advisory No. SA 05-05, dated October 20, 2005, which references "Avidyne's Service Alert SA-05-001 – Primary Flight display (PFD)" (also attached). Both recommend increased attention to standard and emergency operating procedures when flying in Instrument Meteorological Conditions (IMC).

The most significant procedures are:

- Requirement to have a working backup attitude indicator
- Performance of a full instrument scan including the backup indicators with frequent instrument cross checking procedures
- Currency on partial or emergency panel attitude control
- Use of autopilot in the NAV/GPS or NAV/GPSS modes.

Avidyne is trying to find the cause of the problem. This SAIB is an interim airworthiness action until we can fully understand this issue. We may take further airworthiness action in the future.

Recommendation

We recommend you review both the Cirrus and Avidyne documents and use the recommended procedures.

Cirrus Owner Advisory No. SA 05-04 may be read or printed from www.cirrusdesign.com under "Service & Upgrades" – Service Publications".

For Further Information Contact

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Owner Service Advisory SA 05-05

Issued: 20 Oct 2005

Models SR20 and SR22

TO: Owners, Operators, and Service Centers

SUBJECT: Avidyne Service Alert SA-05-001 - Primary Flight Display (PFD)

EFFECTIVITY: Cirrus Design SR20 serial numbers 1337 & subsequent.
Cirrus Design SR22 serial numbers 0435 & subsequent.

Avidyne Corporation has released Service Advisory SA-05-001 - Primary Flight Display which describes a condition where the PFD may display incorrect attitude and heading information. Airspeed and altitude information are not affected. This condition has been noted on a limited number of aircraft.

- Cirrus Design reminds pilots to ensure, particularly if in Instrument Meteorological Conditions (IMC), to cross-check PFD indications against the backup instruments. Adherence to these normal procedures, in conjunction with the PFD's error monitoring system, should allow for accurate monitoring of roll attitude indication.
- Because the autopilot receives attitude information independent of the PFD, the use of NAV/GPS or NAV/GPSS modes when in IMC are recommended.
- Report any PFD anomalies as outlined in the Avidyne Service Alert directly to Avidyne Corporation and/or Cirrus Design.
- Avidyne Corporation is aggressively investigating this condition and is currently developing service instructions to address this condition.

For additional information contact:

AVIDYNE CORPORATION

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CIRRUS DESIGN CORPORATION

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SA-05-001
17 October 2005

SERVICE ALERT

Avidyne Primary Flight Display

{P/Ns: 700-00006-000,-001,-002,-003,-100}

This **SERVICE ALERT** communicates important safety information concerning aircraft with Avidyne Primary Flight Displays (PFD) installed while flying in instrument meteorological conditions (IMC) or in conditions in which visual reference to the horizon cannot be reliably maintained.

BACKGROUND INFORMATION

Avidyne has received a limited number of field reports of PFDs displaying incorrect attitude and heading information. These occurrences were accompanied by a "CROSSCHECK ATTITUDE" alert annunciation displayed approximately 45 seconds after initiation of this condition. During these occurrences, altitude and airspeed indications on the PFD and attitude, airspeed and altimeter back-up instruments were unaffected. None of these occurrences led to an accident or incident.

While these field occurrences have been infrequent, no new operating procedures are required beyond those provided in the associated aircraft and equipment operating manuals. Backup systems and equipment, coupled with frequent instrument cross checking procedures accommodate these occurrences.

The following observations may accompany a Primary Flight Display whose attitude reference system is not functioning properly:

- PFD indicates a roll attitude that does not reflect the aircraft attitude to within a few degrees
- Progressively increasing roll angle display (in either direction and at any rate) without a corresponding change in aircraft attitude
- Display of the "CROSSCHECK ATTITUDE" alert annunciation on the PFD.
- Display of a small oscillation in heading on the PFD horizontal situational indicator (HSI) in coordination with the roll attitude excursion, with corresponding heading change depictions on aircraft map and navigation displays (including Avidyne EX5000 MFD and Garmin GNS430)
- HSI heading changes inconsistent with magnetic compass indications. Note that the autopilot will track to possible inaccurate HSI headings while in heading hold (HDG) mode.
- Repeated failure of the PFD to align during initialization, not attributable to aircraft motion or location.

Airspeed and altitude indications on the PFD and back-up attitude, airspeed, altimeter instruments are unaffected. STec 55X autopilot GPS steering (GPSS) mode and vertical modes are unaffected and remain valid.

Avidyne has notified the FAA and its OEMs about these events, and Avidyne's technical investigation is ongoing. This issue is considered to affect all Avidyne Primary Flight Displays. **Retain this Service Alert in the Primary Flight Display Pilot's Guide which is to be in the aircraft.**

SAFETY WARNINGS

BEFORE CONDUCTING FLIGHT OPERATIONS PILOTS MUST REVIEW AND FAMILIARIZE THEMSELVES WITH THE CROSS-CHECK MONITOR SECTION OF THE AVIDYNE PRIMARY FLIGHT DISPLAY PILOT'S GUIDE AND ALL LIMITATIONS CONTAINED IN THEIR AIRCRAFT OPERATING HANDBOOK.

FOR FLIGHT OPERATIONS IN INSTRUMENT METEOROLOGICAL CONDITIONS (IMC) OR IN OTHER CONDITIONS IN WHICH VISUAL REFERENCE TO THE HORIZON CANNOT BE RELIABLY MAINTAINED (E.G., NIGHT OPERATIONS, FLIGHT OPERATIONS OVER WATER, IN HAZE OR SMOKE, ETC.):

- FULL OR PARTIAL FAILURE OF THE PFD CAN LEAD TO SPATIAL DISORIENTATION OF THE PILOT AND SUBSEQUENT LOSS OF AIRCRAFT CONTROL. THIS COULD RESULT IN AN ACCIDENT CAUSING DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE.
- WHERE THE PILOT HAS REASONS TO SUSPECT THAT ANY SOURCE (PFD OR BACK-UP INSTRUMENTS) OF ATTITUDE, AIRSPEED OR ALTITUDE IS NOT FUNCTIONING PROPERLY, FLIGHT IN THESE CONDITIONS SHOULD BE DISCONTINUED UNTIL EQUIPMENT IS SERVICED AND FUNCTIONING PROPERLY.

IMC operations of aircraft, not equipped with an operating back-up, or standby, attitude indicator, located where it is readily visible to the pilot, are not recommended and may violate limitations contained in the aircraft operating handbook.

Pilots should frequently scan and cross-check flight instruments. Make sure the information depicted on the PFD correlates and agrees with the information depicted on your back-up, or standby attitude indicator, and other instruments.

Exercise basic airmanship and practice partial panel flight operations. If you are not comfortable or current flying partial panel, avoid flight in IMC and marginal VFR conditions.

Electronic copies of the Primary Flight Display Pilot's Guide are available on the Avidyne website at <http://www.avidyne.com/techpubs.shtm>.

SERVICE ACTIONS

At this time, no specific service actions have been identified for units that have not exhibited the behaviors described in this Service Alert. If a PFD and associated aircraft systems exhibit the behavior described herein, this PFD may be functioning improperly and **MUST** be returned to Avidyne for servicing prior to further flights in IMC conditions.